

Title (en)  
Precision digital phase shifter

Title (de)  
Präziser digitaler Phasenschieber

Title (fr)  
Déphaseur numérique de précision

Publication  
**EP 0780975 A1 19970625 (EN)**

Application  
**EP 96120394 A 19961218**

Priority  
US 57632895 A 19951221

Abstract (en)  
A phase shifter (50) employs digital circuitry to achieve arbitrarily fine phase control of reference signals at frequencies extending to the Gigahertz region. The phase shifter (50) includes a cascade of identical phase shift units each comprising a dual mode frequency divider (52A) followed by a further divider (58A), whose output is upconverted by a digital mixer (60A). The effect of the cascade is to provide progressively finer phase control resolution over a full 360 degree range. The phase shift provided by each stage is determined by divider control (112A), regulating the number of cycles of the dual mode divider (52A) which are produced by a chosen one of the division ratios. The phase precision is set by the number of stages used. <IMAGE>

IPC 1-7  
**H03H 17/08**; **G01S 7/02**

IPC 8 full level  
**H03H 17/08** (2006.01); **H03K 5/00** (2006.01); **H03K 5/13** (2006.01); **H03K 23/00** (2006.01); **H03K 23/64** (2006.01); **H03L 7/00** (2006.01); **G01S 7/282** (2006.01); **G01S 7/285** (2006.01)

CPC (source: EP US)  
**H03K 5/13** (2013.01 - EP US); **G01S 7/282** (2013.01 - EP US); **G01S 7/285** (2013.01 - EP US)

Citation (search report)  
• [XY] US 5345239 A 19940906 - MADNI ASAD M [US], et al  
• [XY] US 5111206 A 19920505 - MADNI ASAD M [US], et al  
• [YA] US 4560960 A 19851224 - CHANRION JEAN C [FR]  
• [A] PATENT ABSTRACTS OF JAPAN vol. 006, no. 081 (E - 107) 19 May 1982 (1982-05-19)  
• [A] PATENT ABSTRACTS OF JAPAN vol. 006, no. 064 (E - 103) 23 April 1982 (1982-04-23)  
• [A] PATENT ABSTRACTS OF JAPAN vol. 004, no. 079 (E - 014) 7 June 1980 (1980-06-07)  
• [A] PATERSON J D: "Digital phase shifters", MARCONI REVIEW, 1973, UK, vol. 36, no. 190, ISSN 0025-2883, pages 193 - 199, XP002027725

Cited by  
CN102983830A

Designated contracting state (EPC)  
DE ES GB

DOCDB simple family (publication)  
**EP 0780975 A1 19970625**; **EP 0780975 B1 20010509**; DE 69612723 D1 20010613; DE 69612723 T2 20020207; ES 2156250 T3 20010616; IL 119860 A0 19970318; IL 119860 A 20010826; JP 3091423 B2 20000925; JP H1028032 A 19980127; US 5652534 A 19970729

DOCDB simple family (application)  
**EP 96120394 A 19961218**; DE 69612723 T 19961218; ES 96120394 T 19961218; IL 11986096 A 19961218; JP 34217396 A 19961220; US 57632895 A 19951221